December 1972—January 1973

EMO

NATO Peacetime Disaster Planning

- *Cooperation for Emergency Assistance*
- *Natural Disaster Assistance—Belgium*
- *Disaster Relief Preparedness—Denmark*

Taking the Mystery out of EMO

The "EMP" Threat

CANADA EMERGENCY MEASURES ORGANIZATION

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Editor: A. M. STIRTON

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NATO PEACETIME DISASTER PLANNING

Introduction

Although some years ago NATO had developed a plan for NATO co-operation for emergency disaster assistance in the event of a natural disaster in one of its member countries, the formation of the NATO Committee on the Challenges to Modern Society provided renewed interest within NATO in the peacetime disaster assistance field. One of the initial projects of that committee was disaster assistance, and, as a result of this project, meetings of international experts were held in Venice and San Fransisco on flood and earthquake hazard reduction respectively. Recommendations as a result of these meetings have been provided to member countries.

The NATO plan for common action in the event of a disaster has been revised and up-dated. In addition to providing plans for disaster assistance, it places responsibility on the NATO Civil Defence Committee for the collection and dissemination to member countries of relevant information on pre-disaster planning and post-disaster analysis. It also directs that Committee to conduct seminars, conferences or studies, the aim of which would be to discuss the development of national plans, as well as exchanging information on lessons learned from actual operational disaster experiences.

Within nations there has been a tendency towards a broader concept respecting civil defence-the concept of protection from peacetime disasters, as well as from the effects of nuclear attack. Civil defence is playing a larger role in peacetime disaster preparedness in many countries, and in many respects, national plans may be even more important than international ones at the present time. There is, therefore, a great deal of emphasis being placed on exchange of information and experience through the NATO Civil Defence and Challenges to Modern Society Committees to improve the readiness of individual NATO members.

In view of this, the Civil Defence Committee during its plenary conference in September, 1972, allocated one day for country briefings on the general subject of "Civil Defence Contributions to Peacetime Disaster Relief". Three countries, the United States, Germany and Denmark, gave formal presentations on this subject while three countries, the United Kingdom, Norway and Canada gave informal presentations. Belgium had circulated a paper on its presentation to member countries prior to the conference.

Contributions to the NATO briefing by Belgium and Denmark, as well as the NATO study "NATO Cooperation for Emergency Disaster Assistance in Peacetime" are published in the following pages to illustrate the attention being given by various governments and civil defence to plans and preparations necessary to mitigate the effects of major peacetime disasters.

NATO Co-Operation for Emergency Disaster Assistance in Peacetime

NATO Document C-M (58) (102)

Basic Concepts

Past experience has shown that, in most cases, assistance made available by governments to stricken countries has been furnished on a bilateral basis, either spontaneously or on request, and in most situations this best meets the decisive requirements of rapid reaction. However, assistance has sometimes been based on inaccurate information concerning the receiving country's needs. Consequently, the assistance received has, on occasion, been inappropriate and only partially effective. In some instances, countries anxious to assist have encountered lengthy delays before they could obtain accurate or authoritative information on the receiving country's needs.

Besides, assistance provided by governments, disaster relief to stricken countries is also provided by international organizations such as the United Nations, the League of Red Cross Societies and individual voluntary agencies, organized in the International Council of Voluntary Agencies or similar groupments (see International Emergency Relief Agencies following). As requested by the Council, the disaster relief activities of these and other organizations have been investigated in order to ascertain that the role proposed for NATO would not duplicate capabilities of these other organizations.

These organizations have expressed the desirability of establishing a mechanism for regional co-ordination of disaster relief provided directly to stricken countries by governments.

The League of Red Cross Societies assists only when the need for help exceeds the capabilities of the stricken country's Red Cross or similar organizations. The international co-ordination role of both the League of Red Cross Societies and the International Council of Voluntary Agencies is exercised only with respect to relief activities of non-governmental agencies.

As far as the United Nations Organization is concerned, a plan for a comprehensive report of the Secretary General, "Assistance in cases of Natural Disaster" has been considered by the UN Economic and Social Council. The resolution adopted by the ECOSOC recommended that the UN General Assembly at its 26th session favourably consider the Secretary General's report and the ECOSOC resolution. This plan calls for the establishment of a new office for disaster assistance, whose role would be to co-ordinate help from the United Nations system. For the time being the United Nations plan is only a proposal, whilst NATO has had its own disaster assistance schemes since 1953, the scheme approved in 1958 is now revised and improved by the present document. It cannot, for the time being, be considered a duplication of a United Nations activity. In fact the United Nations Organization directs at present most of its disaster relief efforts and capacilities to the long-term rehabilitation and reconstruction phases in a post-disaster situation. The development and implementation of the United Nations plan will have to be followed and once it will have become operational the NATO scheme for disaster assistance co-operation will have to be re-appraised.

The effectiveness of disaster assistance among countries is highly dependent:

On the part of stricken countries

- the degree of pre-planning and preparedness achieved by them;
- their ability to assess clearly their needs for outside assistance relative urgencies among resources or services requested;
- the provision of information on the assistance required;
- their ability to co-ordinate relief operations and emergency assistance from all sources;

On the part of assisting countries

- the exchange of information on assistance sent, or ready to be sent;
- their ability to act rapidly in supplying resources and/or the services of disaster experts for emergency assistance.

It is therefore highly desirable that each country develop, in view of a possible domestic disaster, a national disaster plan providing centralised direction and/or co-ordination of emergency and recovery operations.

It would be equally desirable if member nations would establish, on a case-by-case basis, co-ordination of their national emergency assistance operations in the case of foreign disasters.

As may be advisable, countries may consider it desirable to conclude agreements in order to eliminate or reduce administrative impediments to timely and effective emergency assistance. These could cover such subjects as financial matters, the crossing of frontiers, customs clearance, transportation for foreign disaster goods, status of foreign relief personnel, etc., in order to eliminate or reduce administrative impediments to timely and effective emergency assistance.

The free and rapid exchange, among countries, of information on the disaster assistance given or planned, is essential to ensure effective international co-operation. The harmonisation of efforts envisioned will essentially result from the knowledge gained through the rapid exchange of information on national actions.

Co-operation among NATO member countries and the harmonisation of their efforts can be facilitated through the establishment at NATO Headquarters a standby mechanism to provide for:

- rapid dissemination to member countries of official information on the occurrence of a major natural disaster within the Alliance;
- expeditious exchange of emergency information among member countries on:
  (i) the assistance needed by the stricken country[1];
  (ii) the assistance being furnished bilaterally to the stricken country from governmental and national voluntary organization sources, either by member or non-member countries, thus decreasing the possibility of unnecessary supplies and duplication, and helping to overcome serious gaps in the provision of critically needed goods.

NATO now has capabilities, such as the Situation Centre and the Alliance-wide communications systems, which appear to be means admirably suited for supporting the stand-by mechanism referred to above. It is understood that their use for disaster assistance would under no circumstances jeopardise the availability of these capabilities for the original purpose for which they were established.

Experts at the disaster site

Experience has demonstrated that the presence of experts capable of making on-the-spot joint assessments with the local authorities of what is needed, substantially enhances the effectiveness of any international assistance operation.

To this end, the government of the stricken member country may request directly from other member countries, or the Secretary General, the assistance of experts. To achieve greater efficiency and closer co-ordination the experts on the site could join together to advise and assist appropriate officials of the central co-ordinating agency of the stricken member country in assessing total needs and identifying requirements for outside assistance.

Organizational and Procedural Arrangements

Functional Responsibility

The Director, Civil Emergency Planning Directorate, acting on behalf of the Secretary General, will be

[1]Aid requirements might include pharmaceuticals, vaccines, food, clothing, emergency shelter, prefabricated housing, water purification equipment, rescue teams and equipment, medical teams, field emergency hospitals, the services of disaster experts, etc.

responsible for carrying out the functions described in paragraphs above and below. The relevant arrangements have been developed by the International Staff under the direction of the Secretary General and are shown under "NATO Headquarters Arrangements for Disaster Assistance Information and Coordination". Member countries will be informed in due course of the appropriate message and administrative procedures.

Preliminary action by the Secretary General

In the event of a natural disaster of major proportions, the Secretary General will request the government of the stricken member country to indicate if assistance is required and the nature and timing of such assistance.

Actions to be taken by a stricken member country

If assistance is required, a stricken member country should notify member countries and the Secretary General, by the quickest method, indicating the name and address of its central co-ordinating agency.

Initially, the central co-ordinating agency should give the following information:

- type of disaster, when and where it happened, population and size of area affected;
- qualitative and quantitative description of the assistance required;
- timing of assistance needed and recommended points of entry and delivery;
- relative urgencies of the various types of assistance requested;
- whether the services of experts are desired.

Subsequently, reports from this agency to member countries and the Secretary General should include information on the type and amount of assistance pledged and received from outside sources and additional requirements, if any, still to be met.

Actions to be taken by the assisting country

The assisting country will directly contact the authorities of the stricken member country and make all necessary arrangements. Responses from member countries to the stricken country should be sent by the fastest means which can conveniently be used at the time, with corresponding information to the other member countries and the Secretary General through the Alliance-wide communications systems.

The assisting country should advise the stricken member country of the:

- type and quantities of goods and equipment provided from government sources as well as from national relief and voluntary agencies which have associated themselves to its undertaking;
- type and number of accompanying personnel, if any;
- place and time of departure;
- routing;
- place and expected time of arrival;
- any additional information which would assist the receiving government to make immediate use of aid being furnished, such as whether personnel accompanying equipment are self-supporting or not, whether follow-on support is being provided, whether equipment being delivered requires special transport to disaster site, whether border crossing assistance is needed, etc.

Actions taken by the Secretary General upon the receipt of a request for assistance

On the basis of the request for assistance from a stricken member country, the Secretary General will activate the necessary elements of the International Staff to take steps to urgently promote the necessary assistance. To this end, the Director, Civil Emergency Planning Directorate will:

- activate the NATO Headquarters' standby machinery;
- re-transmit to all NATO capitals, as may be necessary, the assistance request and other available information on the disaster;
- ensure that information subsequently obtained on assistance available or being furnished bilaterally by assisting countries and on any additional needs of the stricken member country is relayed to all member countries as appropriate;
- take all necessary and urgent steps to facilitate or help expedite the delivery of assistance items requested by the striken member country and to locate, as far as possible, the items that have been requested and which have not been obtained bilaterally;
- take the necessary measures to contact, as may be required, for the purpose of obtaining supplemental information, other organizations such as agencies of the United Nations, the League of Red Cross Societies (LICROSS) and the International Council of Voluntary Agencies (ICVA).
- if specifically requested by the stricken member country, assist it in obtaining the services of experts, not otherwise provided bilaterally, who would be willing to accept temporary duty assignments in the stricken member country.

Financial and Other Responsibilities

Insofar as possible, emergency assistance should be given without cost to the stricken member country.

In regard to questions of pay and insurance coverage of disaster assistance personnel, transport of non-expendable equipment and supplies used by them, customs clearances, cost of local transportation, accommodations, feeding, etc., experience has shown that the absence of appropriate bilateral or multilateral agreements was a serious hindrance to expeditious actions in times of disaster.

This deficiency could be gradually overcome by drawing up model memoranda of understanding, which member countries could develop into bilateral or multi- or multilateral agreements applicable in the case of disasters. Such model memoranda of understanding

should be introduced in NATO, at the level of the Senior Civil Emergency Planning Committee.

Actions Involving Non-Member Countries

If a country outside the Alliance requires assistance, arrangements would be a matter between the assisting member country and the stricken country. However, the assisting member country, having obtained information on the requirements of the stricken country, should communicate this information and information on the assistance given to the other member countries and the Secretary General through the Alliance-wide communications systems.

Conversely, should a country outside the Alliance spontaneously offer help to a stricken member country, the latter should notify the other member countries and the Secretary General of the nature and type of assistance thus provided to it.

Such exchange of information would help the harmonisation of disaster assistance efforts of member nations.

Pre-Disaster Preparedness Arrangements

It is hoped that countries may increasingly be able to exchange data to help in forecasting and predicting certain natural disasters. Exchange of information of this type would normally take place among the technical agencies of countries. They may react, for example, by intensified weather watches and more rapid exchange of meteorological data. In this way, countries could be alerted as to the possibility of an impending disaster and call for assistance.

Within NATO, the Civil Defence Committee will be responsible for the collection and dissemination to all member countries relevant information on pre-disaster planning and post-disaster analysis. Further, to the extent it is not redundant with the work of other International Organizations or NATO Committees, the Civil Defence Committee will conduct seminars, conferences, or studies, the aim of which would be to discuss the development of national plans, as well as exchanging information on lessons learned from actual operational disaster experiences. Such conferences or studies could assist in improving national disaster assistance capabilities.

International Emergency Relief Agencies

While the basic document is oriented to assistance actions taken by member countries, it is necessary also to speak to the emergency relief activities of the non-governmental agencies, both at the time of the emergency and early rehabilitation phases of post-disaster assistance. An inter-relationship exists between measures taken by the governmental and non-governmental sectors. Many emergency relief items arising from governmental stocks are provided to the disaster victims through the national and international non-governmental voluntary agencies.

The exchange of information proposed by the basic document envisages the exchange of data on both the governmental and non-governmental assistance to the stricken country. This hypothesis, carried to its logical conclusion, would indicate that each nation should, so far as it could, take appropriate steps to ensure that the responses from the non-governmental sector, especially the national Red Cross/Red Crescent societies and other voluntary organizations, both private and religious, are properly co-ordinated and considered in any national disaster assistance action. Further, it is sensible that national disaster plans consider and integrate, where possible, the capabilities for action of the non-governmental relief agencies.

Among the many agencies providing disaster relief directly to stricken countries and the victims of a disaster, several at the international governmental and non-governmental level are of interest.

The League of Red Cross Societies, founded on 5th May, 1919, is the world federation of national Red Cross, Red Crescent and Red Lion and Sun societies. The objectives of the League are to encourage and facilitate at all times the humanitarian activities of the national societies, with a view to assisting them in the organization and exercise of their activities, both national and international. When a disaster occurs, the relief programmes of the Red Cross provide emergency assistance including food, clothing, shelter, medical and nursing care, and other basic necessities of life, and such social services to individuals, families, groups and communities as are needed.

Several European countries do not yet have national disaster relief plans, while others have not perfected their plans. From the League's viewpoint, this not only weakens the responsiveness of the national Red Cross societies, but also makes the national effort, governmental and private, less than totally effective. The LICROSS Secretariat, in recent years, has been encouraging and assisting national societies to organize and prepare for relief actions. They have suggested that, where national disaster relief plans do not exist, national societies take action to remedy this deficiency. The LICROSS has published and distributed a "Guide to a National Disaster Relief Plan" for use by all governments and national societies. The LICROSS Secretariat would welcome the endorsement and efforts of NATO governments towards national disaster relief planning, both for internal and external application.

The LICROSS "Guide to a National Disaster Relief Plan" sets forth the following four principles and rules for disaster relief:

- Prevention of disasters, assistance to victims and reconstruction are first and foremost the responsibility of the public authorities. In principle, Red Cross help is of an auxiliary and complementary nature and operates basically in the emergency phase. However, if circumstances require and provided the Red Cross is assured of the necessary resources and means, it may undertake longer term assistance programmes.

- In order to cope with the effects of disasters, each country should have a national plan outlining an effective organisation of relief. If such a plan does not exist, the National Society should instigate its establishment.
- To ensure rapid mobilisation as well as complete and effective use of material and personnel resources, the national plan should envisage co-ordination through the establishment of a centralised direction. Such central direction should be able to provide precise and official information on the effects of a disaster, its evolution and the needs.
- The extent of the Red Cross relief programme depends on the responsibilities delegated to the National Society by its government or by the national relief plan. As a general rule the Red Cross programme is limited to the provision of: first aid, medical and nursing care, food supplies, clothing, shelter, social welfare, tracing services and other forms of emergency assistance.
  (Approved by the XXIst International Red Cross Conference, Istanbul, September 1969, with the participation of governments and Red Cross societies).

International Relief Union. At present only five members of the Alliance retain membership in this organization.

The objectives of the IRU as stated in Article 2 of the 1927 Convention are to:

- Provide first aid to stricken populations in disasters due to acts of God, the exceptional seriousness whereof exceeds the people's capabilities and resources, and to collect therefore donations, resources and assistance of all kinds.
- Co-ordinate, if need be, the efforts of relief organizations in all public disasters; (generally, to encourage studies and measures for the prevention of disasters) and to intervene so that all nations put into practice mutual relief on an international scale.

During the period 1967-68 an agreement was formulated and executed by the Union whereby UNESCO assumed the responsibility for the continuance of the Union's work encompassed by the bracketed working above. Efforts have not yet been successful to have the United Nations assume the other aspects of the Union's objectives.

International Council of Voluntary Agencies. The ICVA results from a 1962 amalgamation of three existing non-governmental co-ordinating bodies primarily concerned with refugees and migrants problems. The formation of the ICVA was intended to enable non-governmental groups to bring to bear experience acquired in other fields, such as assistance to developing countries and peacetime emergency assistance. The present membership of the ICVA is approximately 100 organizations. Included in this Council are such agencies as Caritas Internationalis, The World Council of Churches, OXFAM, with significant resources and world-wide interests, along with similar non-governmental societies having a specialised and localised character.

Three Commissions drawn from its memberships have been established, one on Refugees and Migration, one on Emergency Aid and a third on Social and Economic Development.

The Commission on Emergency Aid is primarily concerned with promoting and strengthening relationships among the voluntary agencies themselves, and between the voluntary agencies collectively and the League of Red Cross societies. The League is viewed as the best equipped organization for mobilising relief resources in emergency situations. The ICVA Commission on Emergency Aid has the following functions: "In its activity in the emergency aid sphere, ICVA thus aims firstly to be of assistance to its membership in promoting voluntary agency participation in pre-disaster planning, at the national and international level, including improving liaison with bodies outside the immediate ICVA circle. Secondly, ICVA aims to assist the agencies better to co-ordinate with each other and with outside institutions in their responses to actual disasters. In all of this, there is clear importance to be attached to the channelling of public responses, and to informing a wider public on the existence of the agencies and on their potentiality for useful work prior to and in disaster situations."

The United Nations Organization. The UN specialised agencies have been active in disaster matters in accordance with their resources and constitutional obligations. Over the years they have built up a considerable capacity for assisting governments, at such times, and for contributing to the control or mitigation of the effects of disasters. Due to the severtiy of several recent disasters, the members of the United Nations have urged the Secretary General to accelerate activities and planning for disaster assistance within the United Nations. To this end, the UN Secretary General recently forwarded for the consideration the Economic and Social Committee UN document (E/4994, 13th May, 1971) containing a number of recommendations, identifying four main areas in which international assistance might be strengthened:

- Prevention, control and prediction;
- Planning and preparedness;
- Better organization of relief action when the disaster occurs;
- Rehabilitation and reconstruction.

The United Nations Economic and Social Council at its 51st Session adopted a resolution which in the main accepted the UN Secretary General's document and recommended that the UN General Assembly at its 26th Session endorse the proposals and recommendations of the resolution. It is pointed out in the UN document that while the government should be able to count on the help of the international community, provided through governments, the League of Red Cross Societies and other voluntary agencies of the United Nations Organization, in its preparations against

or its efforts to meet such emergencies, *the primary responsibility for protecting the life, health and property of people within its frontiers and for maintaining the essential public services rests with that government.*

Many areas of activity will, on the other hand, require strengthening if the United Nations system (in co-operation with donor governments, the League of Red Cross Societies and other voluntary agencies) is to play the larger role expected of it. The document states: to stimulate further action in the various areas in question and to help in ensuring that international assistance is as effective and well co-ordinated as possible, will call for a concerted effort among the organizations of the United Nations system. The role of the competent organs of the United Nations—including that of the Secretary General himself—in ensuring co-ordination will be of particular importance. The UN Secretary General in recommending a more active role for the UN, wishes a modest increase in staff for this purpose. Briefly, this office would:

- maintain continuing contacts with the governments of potential recipient and donor countries, as well as countries of transit; with the United Nations aid-giving agencies and programmes which will be expected to maintain close contact with the office and keep it advised of all relevant activities, as well as with the League of Red Cross Societies and other major voluntary agencies; and with the resident representatives to whom it must be in a position to provide the support of experienced staff in time of emergency;
- arrange assistance to disaster-prone countries in pre-disaster planning and disaster-preparedness arrangements;
- collect, digest, keep up-to-date and disseminate to those concerned the mass of detailed information concerning the affected country and its resources which is essential for the effective organization of assistance, as well as concerning available aid from within and outside the United Nations system.

The UN document, in one of the closing paragraphs of the recommendations, sounds a note of caution:

> "While the office, at least at the outset, can be quite small, it would in the Secretary General's view be better not to increase United Nations involvment in the area of assistance in connection with natural disasters if the funds necessary for the modest staffing and other costs required (including facilities for rapid communication) cannot be guaranteed. The risk must be avoided of raising hopes that cannot be fulfilled."

Nato Headquarters Arrangements for Disaster Assistance Information and Co-Ordination

On behalf of the Secretary General, the Director, Civil Emergency Planning Directorate will be responsible for taking, in a disaster situation, the actions specified in document C-M(58)102—1971 Edition.

The NATO Situation Centre, operating on a 24-hours basis, provides a means for following events as they occur in a disaster situation, since it has direct access to the Alliance communications systems and news services' teleprinters. The duty watch officer of the Situation Centre will normally be the first officer of the Headquarters to have information of a disaster. This would be particularly true in regard to such incidents occurring outside of normal duty hours and on holidays and weekends. Accordingly, he will immediately inform the Director, Civil Emergency Planning Directorate, or his representative, of all pertinent information received and indicate the source.

The Civil Emergency Planning Directorate will furnish the Situation Centre with a list of assigned officers in the order in which they are to be called in the event of a disaster, by the Situation Centre duty watch officer.

The Director, Civil Emergency Planning Directorate will establish an ad hoc watch system to closely follow events and take such action as may be necessary. The physical location of this ad hoc watch will be determined by the severity of the disaster and the degree of activity emanating therefrom. For this ad hoc system he will first draw on personnel of his own staff and then on other elements of the International Staff, as may be required.

Functions of the Director, Civil Emergency Planning Directorate or his delegated staff officer in carrying out the role of information co-ordinator are to:

Pre-disaster preparedness

- maintain, on a current basis, a list of the national central co-ordinating agencies, as designated by each member government, which would be the source and recipient of all official messages concerning a disaster;
- maintain a list of telephone numbers of the central co-ordinating agencies and key individuals in each capital; this list will only be used when telegraphic communications will not suffice;
- consider and recommend changes, modifications or updating of procedures as may be required either in the C-M document or in its Annexes to the appropriate Committee, or to the Secretary General where internal procedures are concerned.

Disaster operations

- advise the Secretary General of the situation;
- contact the appropriate delegation officer of the stricken member country;
- ensure that the information received from the stricken member country is re-transmitted as necessary, to all capitals, delegations and NATO authorities concerned;
- maintain liaison with the Directorate of Council Operations and the Situation Centre;
- maintain an overview of the situation as it develops

with the aim of providing information to assisting countries which may facilitate or help expedite the delivery of assistance to the stricken country;
- establish contact, as may be required and on instructions of the Secretary General, with international relief and assistance agencies, with a view to obtaining supplemental information;
- prepare, as necessary, briefings for the Secretary General and/or the Council on the disaster and the assistance being provided.

Post-disaster

- prepare a report for the Secretary General for his consideration and subsequent dissemination in accordance with his directions. ▲

Natural Disaster Assistance – Belgium

Presented by R. Pianet
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Preamble

The Belgian Civil Defence Administration has taken part in two symposia—Flood Mitigation and Pollution of the Sea by Oil Spills as well as in the discussions which led to the revision of the document on NATO Co-operation for Emergency Disaster Assistance in Peacetime. In this connection, the Civil Defence Administration has submitted several documents drawn up in conjunction with other Belgian Government departments and services describing national achievements or plans in the field of peacetime disaster relief. It is thought that the following summary will be of interest to the Civil Defence Committee.

The Legal Basis for Belgian Civil Defence Operations in the Event of Natural Disaster

The Act of 31st December, 1965 on Civil Defence (Moniteur Belge 16.1.64) is designed to ensure "the protection and survival of the nation . . . . in the event of armed conflict" but also provides for "the protection of life and property at all times in the event of various kinds of disaster".

A Royal Decree of June 1971 (Moniteur of 24.7.71) made the following provisions for the co-ordination of relief throughout the country:

- initial relief operations will invariably be organized locally (fire-brigade) under the responsibility of the Burgomaster;
- Burgomasters are required to inform the Provincial Governor (and through him the Minister) of any disaster entailing the use of several relief units;
- the Civil Defence Corps must be called upon for additional assistance in certain specific cases;
- it will come into operation automatically in the event of calamities and catastrophes;
- when the Civil Defence Corps acts in conjunction with other bodies (fire-brigade, armed forces, public works Department, Red Cross, etc) the Provincial Governor will co-ordinate operations with the help of the Provincial Civil Defence Commander;

The Royal Decree gives a legal connotation to the terms "calamity" and "catastrophe". Thus "calamities" include natural events leading to widespread damage (such as floods caused by rivers in spate); and "catastrophes" include accidents arising from human actions or negligence (bursting of dykes, pollution, etc. . . .) and which exceed in scale the predictable average on which local relief facilities are based.

Peacetime Operational Facilities

At the provincial level, there is a co-ordinating Committee made up of the provincial Heads of administrations and bodies who are in a position to provide personnel or equipment for relief work. This Committee studies the vulnerable points in the province (e.g. areas subject to flooding) and establishes in advance the broad responsibilities of the different bodies in respect of calamities or catastrophes whose location or extent can be forecast.

The Committee draws up a list of the relief facilities available and, where necessary recommends that reserves should be stockpiled, increased or updated (polluting agent absorbents, sandbags, etc.). In the event of calamities or catastrophes, the Committee members concerned meet as a board, either on the spot or with the Provincial Governor, and act as a technical general staff.

Three mobile columns and one civil defence depot are available at all hours. They can be called upon by any civil or military authority. They have additional equipment for the fire-fighting services (heavy pump units delivering 6,000 (litres) 1/min; hose reels, saponi-

fying agents, etc.) as well as special equipment whose purchase by the local services would not be justified (oil slick barriers and mobile oil-skimmers; water purifiers; fast launches; orbiphones; rubble clearance equipment). They also help to provide emergency assistance for road casualties.

Ten thousand volunteer rescue workers are available at one, three or eight hours notice. They can be mobilised through some 150 rallying points but are normally used inside their home area or province. Volunteers and mobile columns have recently been called upon to assist with:

—floods accompanied by breaching of dykes;
—mud slides;
—peat fires;
—searches for children lost in the peat bogs;
—sealing of a burning rubbish pit which was giving off toxic fumes;
—safety measures at air shows and motor racing events.

The Ministry of the Interior has a special budget to cover the cost of operations carried out at the request of the Civil Defence Authorities. A disaster fund, is regularly replenished, is used to provide food and emergency shelter for victims. The Provincial Governor prepares records on the basis of which compensation for disaster victims is calculated and charged either to those responsible for the accident or to the State.

Administrative Facilities

For peacetime operations, the Civil Defence Authorities make maximum use of an act passed in 1963 which empowers them to "co-ordinate the preparation and implementation of measures designed to protect persons persons and property". This work covers both preventive measures and the study of *operational plans*. It in no way diminishes the statutory functions or responsibilities of outside departments or bodies, but is intended to fill any gaps and to avoid duplication and misunderstandings over the allocation of duties.

Preventive measures

Flooding

The Belgian Public Works Department has devised an entirely satisfactory long-term plan to deal with flooding from embanked waterways brought on by tides or spates owing to heavy rainfall or a combination of the two. The preventive measures are:

- the provision of expansion reservoirs (lakes; canals etc.) which, at the same time, serve as separation reservoirs for waste water and can therefore be used to store drinking water;
- the straightening of curves and the strengthening of embankments under a recent enactment empowering the State to take action if riverside landowners fail to do so;
- the improvement of the forecasting and warning system devised in conjunction with the Royal Meteorological Institute;
- the designation of areas still subject to flooding as being unsuitable for building.

The planning of preventive measures for rivers without embankments is less advanced because there are so many possible causes of flooding to be taken into consideration.

Movement of dangerous product by pipeline

In collaboration with the Civil Defence Authority, the Department of Economic Affairs has made it mandatory for builders and users of pipelines carrying oil, gas, acids and oxygen to introduce certain safety and warning measures and to inform the Civil Defence Authorities and the fire brigades of the action thus taken.

Establishments using radioactive material.

The Public Health Department, in conjunction with the Civil Defence Authority, has set up a call and warning system which will come into operation in the event of the theft or loss of radioactive material from establishments using ionising sources or in the event of accidents caused by fire or by machinery getting out of control in such establishments.

Action

Flooding

The Public Works Department and the Civil Defence Authority, are jointly responsible for keeping watch on embanked waterways during storms at sea and the Civil Defence Corps can be called upon for help on all waterways in the event of flooding or mud-slides.

Movement of dangerous products

Arrangements exist for calling in Civil Defence assistance for pipelines and road transport.

Ionising radiation

The permanent *and voluntary* members of the Civil Defence Corps (i.e. those in the static and mobile Stations of the NBC monitoring and warning network) are incorporated in the warning system and the radiation monitoring network in peacetime.

Oil pollution of open waters (coastsand ports)

In accordance with the Bonn agreements, all oil pollution reports are now received in Belgium by a single centre. The Belgian Navy (Ministry of Defence) has been made permanently responsible for the implementation of pollution measures at sea and in the maritime part of the Scheldt up to the ports of Ghent, Terneuzen and Antwerp.

A problem of international law in connection with the Netherlands part of the Scheldt has not yet been completely resolved.

The Civil Defence Corps provides products for dispersing or absorbing oil slicks and takes over responsibilities for co-ordinating operations started at sea or in the maritime part of the Scheldt as soon as the pollution reaches the coast or ports. It also coordinates depollution operations started in the ports in conjunction with the Navy and the oil producing and refining companies.

The Civil Defence Authority has assigned to a Public Health Department laboratory the task of studying the harmful effects of depolluting agents on the biological environment. It has received information on the operational plan drawn up by the Jersey Group which provides its members (companies engaged in the extraction, movement and refining of oil) with barriers, extractors and depolluting agents on a private basis. The Civil Defence Corps intends to apply this plan if the need arises.

Application of CM (58) 102, 1971 Edition

Belgium strongly supports the principles set out in *CM(58)102 1971* Edition (See page 1) and especially the following clauses:

- provision of a communications network for NATO member countries;
- the recommendation that member countries should provide only such assistance as has been requested, and is technically appropriate;
- the recommendation that the NATO International Staff and member countries should exchange the necessary information so as to avoid duplication and the risk of aircraft, trains or other means of transport travelling empty.
- the recommendation that member countries should have a single national agency—preferably technically qualified—for the co-ordination of international relief.

Belgium considers that the implementation of the measures set out in the *above* document will entail the following practical steps on the part of NATO and or certain member countries:

- NATO telephone, telegram and telex messages concerning disasters should not be sent to Defence Ministries and delegations or Foreign Ministries, but to a relief agency manned on a permanent basis.
- the NATO centre for receiving or requesting information in the event of disasters will have to be run as an operational agency. ▲

Peacetime Disaster Relief Preparedness

by

Erik Juhl

Head, National Civil Defence Directorate—Denmark

A review of the most important elements of the Peacetime Disaster Relief Preparedness Systems established by the Danish authorities, with special consideration to the role of Civil Defence presented to the NATO Civil Defence Committee meeting in September 1972.

The "Information Letter" which last month was sent by the Chairman to the members of the Civil Defence Committee contained the following passage:".... in several countries—including my own—tendencies are making themselves felt towards giving less weight to the war aspect of the Civil Defence activities and instead focusing the efforts in organizing the Civil Defence as a peacetime disaster relief service. . .".

In this presentation I shall try to describe to you the position of Civil Defence in Denmark within this field and to give you an impression of how the Danish Civil Defence to an increasing extent is concentrating on peacetime disaster relief activities.

However, in order that you may fully understand the possibilities of the Danish Civil Defence in this respect, I would like to begin by giving you some information about the factors forming the basis of these possibilities.

The Danish Civil Defence Act

According to the objects clause of the Danish Civil Defence Act, the Civil Defence shall provide, through preventive and remedial measures, a civilian protection of life and property against the consequences of war actions.

In the same section it is added, however, that to the extent to which the Minister of the Interior may resolve, the Civil Defence shall also *in times of peace* render assistance in the event of disasters as well as under other similar conditions which necessitate public action. In such instances, the provisions laid down in the Civil Defence Act shall apply also in peacetime.

This latter provision on the peacetime functions of the Civil Defence, the present wording of which was formulated in 1962, when the Act was amended, is based on the desire for utilizing also in the event of peacetime disasters the considerable potential built up by the Civil Defence with the taxpayers' money in preparation for war—a potential comprising both specially trained personnel and equipment provided and stored.

When motivating before the Danish Parliament the present wording of the Act, the Minister of the Interior added that in the event of the country being struck by a large-scale disaster it would be expedient for him to be vested in advance with powers to instantly utilize the possibilities, with respect to e.g. ecvacution, billeting and feeding of distressed persons, which in the Danish Civil Defence Act had so far been provided for exclusively with a view to war. It was expressly stated by the

Minister that what he had in mind in this connection was not only natural disasters but also the accidents with far-reaching effects to which the community might be exposed as a result of the technological development of modern times—thus including also the possibility of radioactive contamination in times of peace.

The task incumbent on the Danish Civil Defence with respect to rendering assistance in the event of peacetime disasters comprises, however, only a duty to assist the public authorities which, in pursuance of other legislation etc., are vested with the responsibility in the disaster situation concerned.

This implies, first and foremost, that it will be the responsible authority at the site of damage who will call the Civil Defence for assistance, and that this authority will continue to hold the responsibility and the command at the site of damage, where the Civil Defence forces will be placed at the disposal of the authority concerned. Another implication is that the Civil Defence will co-operate with the different responsible authorities in the preparation of emergency plans. Such plans may be of a purely local nature, but may also be of a country-wide character.

Rules Governing the Damage Control Responsibility of the Authorities

In Denmark ,the subject of peacetime disaster relief is governed by no specific law, and the responsibility for peacetime disaster relief operations is, therefore, not vested in any particular institution or institutions but rests with the general peacetime authorities according to the statutory provisions governing the latter.

Under Section 22 of the Fire Brigades in Urban and Rural Areas Act, the command in a *scene of fire* is vested in the local chief fire officer or his deputy.

The two principal provisions within Danish legislation on this subject are as follows:

Under Section 108 of the Danish Administration of Justice Act, *the police*, which in Denmark is a state police, is responsible at any site of damage, including scenes of fire, for the maintenance of law and order and for the necessary barring of areas. This provision thus assigns to the police the main responsibility at the majority of sites of damage in peacetime.

In addition to these two general principal provisions on damage control responsibility in the event of peacetime disasters, we have a few specific rules vesting the damage control in other authorities.

I shall here confine myself to mentioning only a few examples, where special rules apply with respect to damage control responsibility in case of accidents taking place within the respective authorities' own territories. In case of accidents occurring within the area of the Danish State Railways, the control of operations at the site of damage will be vested in a representative of the Danish State Railways. As far as the Military Defence is concerned, the supreme command, in the event of accidents occurring within a military area, rests with the local military commanding officer. And in the event of aircraft accidents occurring within the area of or close to a large air port, the rescue service of the latter will go into action according to plans prepared in advvance. The question of rescue operation control will have been provided for in these plans.

However, before going into further detail on the question concerning specific rules governing the assignment of damage control responsibility in the event of different types of accidents, such as oil and chemical disasters, etc., I would like briefly to explain how the Danish Civil Defence is able to render effective disaster assistance in peacetime.

The Danish CD Mobile Columns

The most important element of the Danish Civil Defence peacetime disaster relief system is the corps of CD Mobile Columns.

The corps of CD Mobile Columns, which is provided for in the Danish Civil Defence Act, is a state corps designed to function, in a situation of war, as a long-range aid force that may be called to towns struck by disaster in order to assist the local Civil Defence.

It is a corps with a uniformed force, comprising partly regular officers/and partly personnel consisting solely of conscripts.

In this connection it should be noted that in Denmark all men are liable to do national service and this compulsory service may take place either in the military defence or in the civil defence. A great number of conscripts objecting to military defence and the use of arms prefer to do their national service in the civil defence with its humanitarian objectives. For the sake of completeness I should probably add that there are also conscripts whose objections to do service concern both the military defence and the civil defence.

The CD Mobile Columns, which are provided with motorized equipment and vehicles of their own, are, like the military services, established already in peacetime with a view to the training of conscripts. This training, which at present covers a term of ten months, takes place at seven CD Mobile Column barracks, which are located at different places in the country.

The peacetime assistance rendered by the CD Mobile Columns to other authorities is free of charge and is looked upon as a supplement to the training given to the conscripts. The duty incumbent on the corps with respect to rendering assistance is fulfilled by maintaining at each respective barracks a permanent emergency squad consisting of officers and men—25 to 30 in all—ready to turn out at a few minutes' notice. Supplementary teams may rapidly be organized for assistance, and in the event of large-scale disasters the total force of each respective barracks—about 150 to 200 men in all—can be activated. In addition forces from several barracks can be concentrated to give assistance if required.

The peacetime assistance rendered by the CD Mobile Columns mainly comprises fire fighting, including the extinction and combating of forest and heath fires, and

assistance to the Police and in connection with rescue operations, clearance operations, floods, gales, and other disaster situations.

In addition to these overall disaster relief functions, the CD Mobile Columns, on basis of agreements made with other authorities, have undertaken to render assistance of a specific character. Each of these agreements is associated with a special emergency or disaster plan, which explicitly defines the part to be played by the CD Mobile Columns in the overall relief pattern, specifies the agreed alarm method, provides information about the nature of the operation, and states whether any special equipment provided with a view to the type of disaster concerned is to be brought along.

The Role of the CD Mobile Columns in Special Emergency Plans

As examples of special emergency plans in force at present, and some of which have been in force for years, the following should be mentioned;:

Control of extensive *oil pollution* caused by tanker accidents and similar accidents is the responsibility of the Ministry of Environmental Protection. An emergency plan has been prepared, vesting the coordinating command of all measures by sea and by land in the Flag Officer Danish Operational Forces, who constantly watch the Danish waters. In an emergency, the Flag Officer Danish Operational Forces will call the CD Mobile Columns, who have undertaken to assist in the implementation of measures on land as well as measures partly from the shore and partly from the low water near the shore in order to prevent or try to prevent oil pollution of the beaches.

Any risk of *radioactivity* occurring in connection with peacetime disasters and accidents is the responsibility of the National Health Service, and is immediately to be reported to a special laboratory (the Radiation Hygiene Laboratory), which on behalf of the National Health Service will issue the necessary directions and instructions. As part of the special radioactivity preparedness system mentioned, the corps of CD Mobile Columns has established at each of its seven barracks a special monitoring service, which in the event of minor nuclear accidents posing a risk of radioactive contamination, is capable at any time of sending out immediately a team equipped with special measuring instruments. The team will thus be able to ascertain the degree of contamination and report it by telephone to the laboratory, which maintains a 24-hour service as a basis for further dispositions. The turn-out alarm may be issued by the police for transport accidents or by the Fire Authorities in connection with a fire raging in an industrial plant,.

As part of the special emergency plan established by the National Health Service for the areas surrounding the Danish Atomic Research Establishment Rios, situated only about twenty miles from the centre of Copenhagen, the CD Mobile Columns have undertaken, in the event of accidents at the research establishment involving a risk of radioactive fallout outside the establishment, to make immediately available a number of monitoring teams to measure the radioactive contamination of the areas as a basis for the further dispositions of the National Health Service.

In this connection it may be mentioned that in cooperation with a great number of authorities—including the Civil Defence—the National Health Service is preparing a national emergency plan for application in the event Denmark—or parts of the country—is exposed in peacetime to a large-scale disaster involving radioactive fallout. According to this emergency plan, the CD Mobile Columns are to be vested with relief functions.

In other fields emergency plans envisaging the assistance of the CD Mobile Columns are being worked out.

A dike breach Disaster Relief and Rescue Service has been established for the west coast of South Jutland lining the North Sea. The control of this disaster relief service is vested partly in the Department of Hydraulic Engineering to give assistance in situations posing a risk of the dikes being broken through, and partly in the police, whose task it is, to arrange for an evacuation of the inhabitants of the area in the event of a breach of the dikes. The CD Mobile Columns will assist in carrying out contractors' tasks, and at present the possibility is being discussed of employing Civil Defence personnel in connection with a door-to-door warning of the population.

A recent accident, when a tank lorry carrying an extremely poisonous load of 23 tons of liquid phenol strayed from its compulsory route and tipped over on top of a local waterworks, has accelerated the completion of the plans for the establishment of a chemical emergency system to be activated immediately in the event of accidents occurring in connection with the transport, storage and use of dangerous substances. Except in cases of minor accidents, which the local fire brigade should be able to cope with alone, teams shall be ready to turn out immediately from each of the CD Mobile Column barracks forming part of a nation-wide emergency turn-out system. For such operations special equipment to be provided for the purpose is to be used, and it has been suggested that the whole necessary specialized training of CD Mobile Column personnel and firemen should take place at the barracks belonging to the CD Mobile Columns.

Emergency System Established by the Local Civil Defence

In addition to the disaster relief preparedness of the State corps of CD Mobile Columns—the principle features of which I have described—the local emergency system established by the municipal Civil Defence is deserving of mention.

For the purpose of utilizing the municipal Civil Defence Services established in the individual towns, a peacetime emergency system has been—or is being—set

up in a number of towns on the basis of directions issued by the National Civil Defence Directorate, and approved by the Ministry of the Interior. All towns with more than 20,000 inhabitants are liable to arrange for the establishment of an emergency system of this type. All other towns can decide for themselves whether they will establish such service or not.

In addition to the permanent Civil Defence personnel of the town, this emergency system is based exclusively on volunteers who have received Civil Defense training. This does not mean however that the volunteers have undertaken any obligation or any duty to report. In consequence this emergency system is not, like the CD Mobile Columns, able to go into immediate action in the event of disasters.

It should be mentioned that a few years ago this emer-

It should be mentioned that a few years ago this emergency service did excellent work in Copenhagen in connection with a gas works explosion. And last winter when large parts of the country were struck by an exceptionally heavy snowfall which blocked road traffic, great and commendable efforts to come to the relief of distressed road users were made by several towns.

In a recently prepared recommendation the National Civil Defence Directorate has expressed the view that coordination of the fire brigade of a town with the local Civil Defence will result in advantages to both parties. The recommendation stated that joint leadership of the fire brigade and the local Civil Defence may be of great practical value in respect to the local peacetime emergency systems.

The Civil Defence Analytical-Chemical Laboratory

The analytical-chemical laboratory established by the Civil Defence occupies a special position in the Civil Defence peacetime preparedness efforts. This laboratory was established for the purpose of giving practical and scientific assistance to the National Civil Defence Directorate in connection with the implementation of measures to protect the civilian population against chemical warfare. However the specialist knowledge built up in this way is turned to account in several fields in peacetime. In connection with several chemical catastrophes occurring in the country a representative of the laboratory has assisted the local authorities by giving expert advice. And when fishermen bring home containers suspected of holding chemical agents from the time of the war the police sent samples to the laboratory for analysis. Furthermore co-operation has been established with the recently established Ministry of Environmental Protection to ensure the laboratory is in possession of special facilities and qualifications for contributing to the examination of air pollutants.

Disaster Relief Assistance Rendered by the Civil Defence to Other Countries

To this brief review of Danish peacetime disaster relief activities, which of course is not exhaustive, it would be natural to add a few words about the assistance rendered by Denmark in connection with disasters occurring in other countries.

Throughout the years, assistance to other countries, both in connection with natural disasters and other catastrophes, has in several instances been rendered by the CD Mobile Columns. In each individual case the rendering of such assistance has been based on a decision made by the Danish Government. Such Government assistance has been rendered either direct or through the agency of the Danish Red Cross and the League of Red Cross Societies comprising both the employment of manpower and equipment for relief operation purposes and the supply of equipment (especially blankets and tents) from the Civil Defence depots.

In 1970 an agreement was made with the approval of the Ministry of the Interior, between the National Civil Defence Directorate and the Danish Red Cross, where fifteen persons from among CD Mobile Column officers volunteering for jobs in foreign countries have been selected and given a special training. Normally one of these officers can be made available at very short notice for the purpose of assisting in connection with disaster relief operations abroad for a term of limited duration. In the past years, two-thirds of the officers registered have been sent, to assist in disaster relief activities including India and Bangla Desh.

Closing Remarks

In order to round off this review with a suitable conclusion, I would finish by mentioning the fact that the Civil Defence in Denmark has played an important part in connection with the arrangement of courses on "Elementary First Aid" and "Elementary Hygiene and Nursing". These courses of twelve hours' duration which have been offered to the whole population free of charge have been attended by a considerable number of persons. The reason I mention these public courses as a suitable conclusion is simply that these courses have been arranged on the initiative of another NATO Committee.▲

"TAKING THE MYSTERY OUT OF EMO"

Address by C. R. Patterson, National Coordinator Civil Emergency Measures
to
The Canadian Society of Forensic Science, Ottawa. October 27, 1972.

The objective of Canada's National Civil Emergency Measures Program is to provide the necessary measures to enable the nation to survive and recover from war emergencies and peacetime disasters. The term "measures" refers to those plans and preparations, including training and exercises, required to produce the response to emergency. Emergency Measures Organizations are not a mysterious force that rise to the surface upon the onset of disaster. They are, rather, the planning and, on occasion, coordination base for government response at local, provincial and federal levels for the protection of citizens and their property from the consequences of disaster. The responsibility for emergency measures, as with the responsibility for all other government activities, rests upon the officials of government at the three levels. EMO plans and preparations are designed to employ, to the best possible advantage, the total resources of the community, be it manpower, equipment or systems, to respond to the extraordinary in the way of disasters.

Emergency Measures did not start off with this in mind. In fact, it did not even start off being "emergency measures". Back in the early 40's, during the Second World War, ARP organizations were established at municipal and provincial levels to make the necessary civil preparations to respond to enemy attack by sea or by air—particularly in coastal areas. The purpose, however, has not changed. The idea then, as it is now, was to protect the public, to enable government to continue to give leadership and provide services, and to use resources to the best possible advantage in the emergency.

In 1945 blackout blinds became a thing of the past and it was not until the time of the Czechslovak crises that the subject was again, in 1948, examined this time by Major General F. F. Worthington. As a result of his report to government, a Civil Defence Organization was established within the federal government. The federal purpose at that time was to design a response mechanism that would carry out civil defence activities, as contrasted to armed forces activities, in the event of manned bomber attacks on North America.

The significance of the war threat became greater in magnitude as weapons changed from conventional bombs to fission weapons and then to the H-bomb, the fusion weapon of today. The implications on civil defence activities changed very rapidly too because not only were isolated cities targets, but the whole nation could be in danger. It was to respond to this increased magnitude in the threat to continuity of government, to public safety and to resources, that a new broader dimension to the whole problem of the survival of the nation was recognized by the organization of the Emergency Measures Organization. War threat preparations reached their peak as a result of and shortly after the Berlin and Cuban crises of the early 1960's and today continue to be a part of Canadian defence planning even in these days of what we hope is assured deterrence.

From the beginning of civil defence in the early 1950's, provinces and municipalities which, because the people are there, have always recognized that emergencies occur whether a war takes place or not and have employed their emergency organizations to respond to the peacetime disaster situations as well as to the potential war disaster. Indeed, subsequent to the establishment of the federal Emergency Measures Organization and the Order in Council under which the responsibilities of federal ministers were established, most provinces have update their own legislation. They require their ministers and, in many cases, the municipalities, to undertake the development of necessary plans and preparations to respond to both wartime and peacetime emergencies. To coordinate this planning, all provinces and most large municipalities, or groups of municipalities, have established local organizations known as "Emergency Measures Organizations", "Civil Defence Organizations" or, in the Province of Quebec, "Civil Protection Organizations" to coordinate the development of these measures to the extraordinary emergency—peace or war.

In 1959 the Federal Government agreed that equipment that had been purchased, and preparations that had been made for response to the war emergency could be used to respond to the peacetime emergency as well. This was subsequently reconfirmed at the 1965 Federal-Provincial Conference of Ministers responsible for civil emergency measures.

Every day brings about individual emergencies that are the responsibility of one or more agencies, such as the police, the fire department, hospitals, welfare organizations, ambulances, etc. It is not for these types of emergencies that Emergency Measures as such are established. Emergency Measures are established to develop a capacity for coordinated response in such a situation as where, to use a classic 1972 example, Hurricane Agnes dumped 25 cubic miles of rain water on the eastern seaboard of the United States caused $3.2 billion in property damage, involved the federal government in the expenditure of $2.2 billion in disaster assistance, took in excess of 100 lives, and involved the total emergency resources of a large section of the northeastern United States. The United States' Office of Emergency Preparedness and the Defense Civil Pre-

paredness Agency carried out the coordinating and major operational roles in this disaster.

We do not have to go to the States, however, to find examples of the necessity of coordinated emergency response. Our Canadian population is increasing and is concentrating itself in urban communities. There is a seemingly never-ceasing crescendo of transportation activity involving ever-increasing numbers of people, ever-increasing quantities of goods, hazardous and otherwise, at ever-increasing speeds. The consequent threats of disaster are with us every day and we keep our fingers crossed in the hope that the incidents stay isolated and limited in scope, which, unfortunately, they do not always do.

To give you a glimpse of what EMOs do in Canada, in the past two years the combined emergency forces of various communities and provinces assisted, in certain circumstances by federal resources, have dealt with forest fire hazards to population centres in the Northwest Territories, with potential hazards from chemical spills on the West Coast, with flooding, fortunately restrained by many years of dyking and other engineering efforts on the rivers in the interior of British Columbia, by a windstorm in Northern Ontario, by floods on the flatlands in Manitoba, Saskatchewan and Alberta, by ice jams in Nova Scotia and by a mud slide at St. Jean Vianney, to mention only a few.

From each of these was learned two lessons, both invaluable. The first is that any preparations that have been made have assisted in the purpose of preventing or alleviating suffering and damage and, the second, that there are many many areas where preparations still need to be made to respond in coordinated fashion to problems all the way from evacuation of the threatened to the location, collection and identification of the victims of tragedy.

One of the things that was said to me early in my career in civil emergency planning was that there were very few people who had ever been involved in the Emergency Measures role who, having left it, did not fully support its purpose. Maybe this is one of the reasons that a function sometimes humorously associated with the tin hat, stirrup pump, sand bucket and armband of the post Second World War period, has now come to be a respected activity engaged in, and indeed demanded of, not only governments at all levels, but embarked upon by many of the major power suppliers, the telecommunications industry, oil companies and transportation systems. Today we have in Canada, a national organization within the Government of Canada respondent to ten provincial organizations, one organization covering two territorial governments, as well as several hundred EMOs within municipalities, covering well over 85% of the total population of Canada. The capacity of municipalities to handle emergencies has improved immeasureably over the past ten years and this I would suggest is, in large part, a consequence of the small coordinating organizations known as EMOs. There are very few areas of activity in Canada today where some aspect of emergency preparations is not being made to a greater or lesser degree. On occasions in the past I have felt, as the National Coordinator, that I have had to fight for the very survival of civil emergency measures. Today I am confident that it is part of the fabric of Canadian life. ▲

News Report

Vast bomb shelters protect Chinese

PEKING — (Reuter) — The Chinese have almost completed the construction of a vast system of underground bomb shelters beneath Peking and other cities which officials said yesterday would give protection to entire urban populations in the event of a surprise nuclear or conventional attack.

Every school, factory, restaurant, theatre, new apartment block, government department and most stores have their own shelter entrances and trained staff who know their location and operation.

These entrances lead down into well-lighted and ventilated tunnels and shelters 26 feet beneath the streets of Peking and several other Chinese cities.

The officials said Peking's shelters have hospitals, dormitories, stores and canteens.

Already in operation is a telephone and broadcast system and running water and sanitary facilities.

The officials said the underground shelter system supersedes an earlier series of shelters 13 feet beneath the surface of Peking begun in December, 1969.

Observers noted this indicated that work began following six battles along the Yussuri River on the Chinese-Soviet border.

Work is continuing to perfect the system against nuclear devices.

The officials did not mention the Soviet Union by name as a possible foe but referred to "a million troops stationed along the border."

The passages are about three feet wide and under six feet high but a staircase into a second and lower system still under construction revealed wide passageways roofed with the pre-cast concrete arches often seen piled in the streets of Peking.

A filter system has been designed to purify the air from radiation and this is in the process of being perfected, officials said.

One official commented "If we are prepared there are two possibilities. One is that the enemy does not come. The other is that the enemy will come.

"If we are not prepared there is only one possibility—that he will come."

THE "EMP" THREAT

An Address by the Honorable John E. Davis, Director, Defense Civil Preparedness Agency before the Industry Advisory Committee, Defense Electric Power Administration, Department of Interior in Washington, D.C. on Thursday, November 16, 1972.

Change, it has been pointed out, is the only sure thing in life.

You in the electric power industry are well aware of this. You're engaged in a constant scramble to keep up with changing, rapidly increasing, demands for power—and with changing technology which requires new installations, new expenditures, and new ways of doing things.

In the Nation's civil preparedness program, we're also keenly aware of continuing change—both in the increasing threats to mankind, and in our ways of meeting those threats.

Over the years, much of our effort has related directly to the civil defense side of our program—or preparedness to deal with the effects of nuclear attack.

Today, a new threat within the nuclear era is being recognized.

We in government, and many of you in the power industry, have heard of this threat for some time—but until fairly recently, I doubt if many of us have realized just how potent and widespread it could be.

The threat is called "Electromagnetic Pulse," or "EMP."

Since the phenomenon first revealed itself, a lot has been learned about it—and some means of dealing with it have been found.

For more than a decade, one of the basic planning assumptions of the U.S. civil defense program has been that during and after a nuclear attack on the United States, the flow of electric power to American consumers would continue, except in communities or areas where power generators and/or distribution lines were rendered inoperable by the direct effects (blast, heat, fire) of enemy nuclear explosions.

In recent years, however, new scientific and technical knowledge of nuclear explosion effects—plus the development of a U.S. anti-ballistic missile system—have made that assumption no longer valid.

Accordingly, after comprehensive study and upon recommendation by the National Academy of Sciences Ad Hoc Subcommittee on EMP, the Defense Civil Preparedness Agency (formerly the U.S. Office of Civil Defense) has adopted a new policy: that Federal, State, and local governments, in planning their civil defense systems and their responses to enemy nuclear attack, should assume that centrally produced electric power would *not* be available, even in areas of the country where no enemy nuclear weapons have exploded.

This new policy does *not* imply that an enemy nuclear attack would knock out electric power systems all over the United States. In fact, it is possible that many areas of the country, not affected by the blast, heat, and fire of nuclear explosions, would suffer no loss of power, or for not more than a few hours or days. But there is no way of determining in advance which areas would continue to have power and which areas would not.

The new policy simply means that all governments in the United States—Federal, State, and local—should base their civil defense planning and preparations on the assumption that an enemy nuclear attack *would* interrupt or destroy their regular electric power supplies, rather than on the assumption (followed up to this time) that those supplies would continue to be available. The basic reason for the change in DCPA policy is the new technical knowledge gained in recent years concerning the electrical phenomenon of EMP, associated with nuclear explosions.

When a nuclear weapon explodes very high above the ground, outside or near the upper limits of the earth's atmosphere, great quantities of invisible gamma rays are generated, and spread out very rapidly in all directions.

The rays travelling downward strike molecules of air, and knock the electrons out of the atoms that make up the air molecules. The impact also propels these electrons toward the earth at nearly the speed of light. These electrons in motion constitute a very large current source, which radiates an electromagnetic field, similar to that produced by lightning but stronger. (Unlike lightning, however, it would not "strike" people.)

This phenomenon is called an Electromagnetic Pulse, or EMP. The pulse (call it a surge of electrical energy, great in intensity but of very short duration) is directed downward toward the earth. If it strikes a conductor on its way to the ground, the pulse can cause a powerful electric current (of high voltage and amperage) to be set up in the conductor; and the current probably will follow the conductor to its end.

If the conductor happens to be an electric power line, the powerful electric current may be conducted into the power plant or substation and reach the sensitive power-control equipment. Unless that equipment is specially "shielded" or protected, it could be burned out.

Another problem is that all or part of the power system could be put out of operation by reason of the circuit breakers opening. These large currents could also cause numerous flashovers on high voltage transmission lines. Similarly, the EMP-induced electric current, conducted through the power line, could damage—or interrupt the operation of—electrical or electronic equipment in homes, office buildings, industrial plants, computer facilities, and other places that use electricity.

If the Electromagnetic Pulse (EMP) on its way to the ground should strike a large radio or television antenna (either transmitter or receiver), the resulting electric

current could damage the equipment to which the antenna is connected, unless it was shielded or protected. This probably would put the broadcasting station out of operation. However, portable, battery-powered receivers (as well as radiological monitoring instruments) should easily survive EMP, because of their compact circuitry, provided, of course, the circuitry is protected against current surges that may enter via the antenna or other points.

It should be noted that a *low-altitude* nuclear explosion also would create an Electromagnetic Pulse. However, this is not significant, because such an EMP would not cause appreciable electrical damage much beyond the area devastated by the blast of the explosion. In contrast, a single *high-altitude* explosion (about 50 miles or more above the earth) would create an EMP that could cause electrical damage throughout a large area of the country.

An enemy attacking the United States might purposely explode a few of his nuclear weapons at high altitudes, in order to cause maximum EMP damage and thus disrupt U.S. electric power and communications systems. But even if the enemy did not take such action, it is possible that there would be high-altitude explosions of our own defensive nuclear weapons. Some Safeguard anti-ballistic missiles (ABM's) could be required to intercept incoming enemy missiles very high above the earth and destroy them by exploding nuclear weapons in their vicinity. This may cause some adverse EMP reactions.

The civil defense directors of all 50 States, the District of Columbia, and U.S. territories and possessions (Puerto Rico, Virgin Islands, Canal Zone, American Samoa, and Guam) have been informed of the new DCPA so-called "power off" policy.

Actions are being taken by the Defense Civil Preparedness Agency, its eight Regional Offices, and State civil defense agencies to aid local governments and their civil defense directors in modifying the three major parts of their CD programs that are affected by the new "power off" planning assumption; namely, fallout shelters, electric power supplies, and emergency communications.

Regarding public fallout shelters, local civil defense directors are being asked to take these actions:

- Review their shelter inventories and requirements.
- Identify those public shelters which depend on commercial electric power supplies for ventilation, heating, illumination, etc.
- Endeavor to obtain standby emergency generators for these shelters.
- If such generators cannot be obtained, develop plans to use the shelters without dependence on electric power.

Local civil defense directors will also evaluate the specific effects of a "no power" emergency situation upon all the various parts of their community and area civil defense systems; and then take action to overcome or cope with these undesirable "no power" effects. Broadly speaking, all essential elements of the local civil defence system—such as hospitals, emergency operating centres, essential utilities, and communications headquarters—should be provided emergency electric generators.

Since the effectiveness of any civil defense system in a time of emergency depends greatly upon communications, local CD directors are being asked to take all actions required to assure the continued operation of their government's communications networks even though commercial electric power supplies are cut off.

The community's Emergency Operating Center where local government officials would gather to direct emergency operations) should have backup power supplies and EMP protection for communications equipment. DCPA started encouraging the inclusion of EMP protection in these centers nearly 2 years ago and matches funds to cover the cost of this protection.

Radio and television stations must have EMP protection and standby electric power to stay "on the air" and broadcast emergency information and instructions to all citizens. To help set an example, we are installing EMP protection in our own regional centers, and will have installation work in five out of our eight centers by next summer.

I mention these activities to illustrate a main point—that EMP is a major new threat and needs to be dealt with by civil government and the private sector, just as the military is dealing with it in the design of both offensive and defensive weapons systems.

In view of probable widespread EMP effects throughout the country in the event of nuclear attack, and since uninterrupted electric power supplies would contribute significantly to protecting citizens and saving lives, the Nation's electric power companies need to develop long-range plans and programs for protecting their systems from this new threat.

An excellent beginning would be the appointment of a technical study group of power system engineers, to review the EMP literature and report to you their assessment of the threat and what can be done about it.

In your industry there are many engineers already familiar with electrical effects similar to those that could result from EMP.

The special shielding and grounding required for Extra High Voltage substations are quite similar to protection methods sometimes used for EMP. Also, lightning protection engineers and communications engineers will readily understand many of the problems and know their remedies.

For those companies contemplating new computerized load control centers, I would urge special caution because of the inherent sensitivity of computers to EMP. Likewise, transistorized control and communications equipment may present special problems.

DCPA has sponsored research on EMP interactions with power systems, and we know enough about the problem areas to urge the electrical utilities to consider EMP in their preparedness plans.

The technical study group I have proposed could make an important contribution by recommending how these preparedness plans should deal with the EMP threat.

My technical people would be available for whatever assistance may be required.

As I mentioned in the beginning, the need for change is a certainty in life. We must keep up with the times, with the new technology.

We in government can't do the job alone.

We need the full interest and cooperation of the private sector as well if this country is to maintain a strong civil preparedness posture.

I know we can count on you in the electric power industry in cooperative endeavors to attain such a posture. ▲

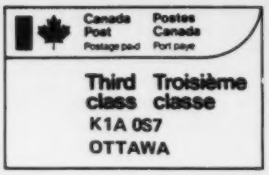
DEPARTMENT OF NATIONAL DEFENCE
CANADA EMERGENCY MEASURES ORGANIZATION

CANADA

MINISTÈRE DE LA DÉFENSE NATIONALE
ORGANISATION DES MESURES D'URGENCE DU CANADA

Ottawa, Ont.
January 1973.

May I take this opportunity to extend to EMO National Digest readers and contributors, federal, provincial, municipal and international civil emergency planners and personnel of Canada Emergency Measures Organization my sincere best wishes for happiness and success in the New Year.

C.R. Patterson,
National Coordinator,
Civil Emergency Measures.

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